

# **Space Protection of the Earth: Concepts and Approaches to the Development**

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A set of general demands to a system for Space Protection of the Earth (SPE) with wide opportunities is presented. It includes categorization of near-Earth objects (NEO) on lead time, type of NEO's orbits, angles and velocities of approach, NEO's shape and overall properties, constituent matter properties etc. The possible structure of the SPE system on the base of existed and near-future technologies is discussed.

Depending on quantitative values of main defining parameters of threatened impact, NEO's orbital movement and internal properties, demands for means of action upon assailant object are discussed. For the most probable methods of action (kinetic projectiles and nuclear explosions, it is presented and analyzed possible regimes of applications. The essential aspects for future studies of these regimes, possible results and their consequences for the Earth and space environment are illuminated.

It is discussed the demands for the launch and ejection subsystems, for delivery, guidance and terminal navigation components. Main attention is devoted to desirable directions for modern and near-future experimental and theoretical research. There are among them overall and matter properties of NEOs, physical and mechanical processes for various regimes of action upon them, more reliable description of consequences of deflecting or shattering actions.

Possible experimental programs for direct study of NEO's properties as a whole is presented. It is advisable to have a conceptual outline of the SPE system, based on the existed technologies, to invest into separate segments of the SPE by near-future technologies development, to correct the SPE subsequently according to this development, and to implement an active space experimental program of NEO's research. This program will provide additional testing of the SPE perspective segments and their interaction.

Essential attention ought to be devoted to social, political and educational aspects to detection and forecast of NEO's threat and to balanced approaches to the SPE system development. It becomes expedient to develop an international coordination of efforts on NEO's threat forecast and the SPE conceptual development. This collaboration will provide more efficient use of limited scientific and technical resources.